# 06 10 00 • ROUGH CARPENTRY

### SECTION INCLUDES

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| 06 11 00 | Dimensional Wood Framing |
| 06 12 00 | Sheathing |
| 06 13 00 | Prefabricated Trusses |
| 06 16 00 | Wood Blocking |
| 06 17 00 | Engineered Wood Framing |

### RELATED SECTIONS

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| 03 30 00 | Cast-In-Place Concrete (Formwork) |
| 06 20 00 | Finish Carpentry |
| 06 50 00 | Structural Plastics & Composites |
| 07 30 00 | Asphaltic Roof Shingles |
| 07 40 00 | Roofing and Siding Panels |
| 07 50 00 | Membrane Roofing |

### ABBREVIATIONS-TESTING AND GRADING AGENCIES

**AITC-** American Institute of Timber Construction www.aitc-glulam.org

**ALSC-** American Lumber Standards Committee www.alsc.org

**ANSI-** American National Standards Institute www.ansi.org

**APA-** The Engineered Wood Association, (formerly American Plywood Association) www.apawood.org

**AWPA-** American Wood Preserver's Association www.awpa.com

**CSA-** Canadian Standards Association www.csa.ca

## LOAD CALCULATIONS

### DESIGN

Calculate loads and specify the fiber stress for lumber.

Avoid over-designing that will result in unnecessarily high material costs. Spruce, Pine or Fir should be adequate for most conditions; provide a rationale for any other species.

## DIMENSIONAL FRAMING

### MATERIALS

The following standards apply to the grading, characteristics and design of framing lumber:

- ❑ Lumber materials must comply with the most current American Softwood Lumber standards; grade stamped.
- ❑ Moisture content must not exceed 19%;MC15 kiln dried where cladding is to be installed.
  ***IMPORTANT!***
- ❑ Species need not be specified unless there is a particular structural requirement.

Specify labelled products, certified by an independent ALSC certified lab, by grade:

- ❑ Vertical Stud Grade - No. 1 or No. 2 grade for interior stud use only, where no tensional loads exist
- ❑ Structural Fingerjoint - No. 1 grade for load bearing studs, headers, lintels & beams

Finger-jointed wood lumber is acceptable for most interior framing except for bathroom wall and floor framing.

The Contractor should submit lumber schedule to the Architect for approval.

## PRESSURE TREATED LUMBER

### MATERIALS

The following standards apply to the grading, characteristics and design of pressure treated lumber:

Use pressure treated wood for:

- ❑ Interior and exterior sills on foundations and slabs
- ❑ Exterior exposed framing and covered decking.
- ❑ Wood in contact with concrete and other masonry
- ❑ Nailers in exterior masonry walls

Pressure treated lumber must be CSA or ALSC labelled for type of use:

- ❑ Above-ground use- min. .25 lb/ft.$^3$; (4.0 kg./m$^3$)
- ❑ Ground-contact use- min .40 lb/ft.$^3$; (6.4kg./m$^3$)
- ❑ Wood-foundation and marine use-min .60 lb./ft.$^3$ ;(9.6 kg/m$^3$), and
- ❑ AWPA-stamped for the level of preservative retention

**Visual inspection is not an acceptable substitute for a label.**

Preservative treatment must comply with AWPA C2 (lumber) and AWPA C9 (plywood). Incising is required for treatment of thin-sapwood species such as douglas-fir, spruce, hemlock and fir.

Arsenic-containing wood preservatives (CCA) are not acceptable.

Preservatives used must be EPA-registered, general use pesticides.

Alkaline Copper Quaternary (ACQ) and Copper Azole (CBA) are recommended for all other uses where wood will be exposed to high moisture or wet conditions (typically all exterior building components).

Acid Copper Chromate (ACC) and Copper HDO (CX-A) are not recommended for ground contact, wet, or below ground uses.

Dipped or heavy brush-coated wood preservative is not acceptable where pressure treatment is required, except at cut ends.

Do not install aluminum flashings where CBA or ACQ pressure treated wood is installed on concrete foundations.

Boron (SBX) treated lumber is not acceptable for most applications
For limited applications where they are used, such as framing lumber where insect infestation may be a concern:

Borate pressure-treated wood products shall be minimum .42 DOT retention and shall carry a minimum 20 year manufacturer's warranty against termites, carpenter ants and fungal decay.

Untreated fir posts (#1 grade) are an acceptable alternative to pressure treated pine, provided post ends are not in direct contact with concrete or ground and post ends are pre-dipped for 24 -48 hours (8" minimum depth from base), in a non-water soluble, waterproof preservative.

Surface brushing is not acceptable.

Use either stainless steel or hot-dipped galvanized fasteners,(meeting ASTM 153) and hot-dipped galvanized connectors, (meeting ASTM- A653), for ACQ and CA pressure-treated wood, (electro-galavanized fasteners are not acceptable).
Consider galvanic action and compatability of fasteners with the chemicals used to treat the wood.
Where fasteners connecting structural members are exposed to high moisture, or in contact with ground or concrete, stainless steel fasteners, (Type 304) are strongly recommended

## DEMISING WALLS AND INTERIOR PARTITIONS

### DESIGN

For common walls between dwelling units, staggered stud walls (with a 5-1/2 inch cavity) are preferred, with a layer of gypsum drywall (5/8 inch) on each side and acoustic batt insulation woven between the studs.

In family duplexes, when stairs are located on opposite sides of a staggered stud party wall, the walls must be fire-blocked, or as an alternative to blocking, filled with spray applied cellulose. The latter is likelier to result in better sound separation since the fire blocking may transmit structure-borne sound.

Double wall construction eliminates the need for fire blocking or cellulose, but requires more framing and more floor area occupied by the wall itself

Offset electrical outlets and other penetrations in party walls.

### EXECUTION

Designer Note: Include specification requirement that the General Contractor is responsible for maintaining the integrity (including shoring) of the structure where cutting and reframing is necessary.

Panelized interior partitions are not recommended for slabs-on-grade, because they are difficult to level.

## SHEATHING

### MATERIALS

Plywood must be grade stamped (APA), by the Engineered Wood Association, Teco or Pittsburgh Labs and shall meet the requirements of the latest edition of Voluntary Product Standards PS-1 or PS-2.

Exterior sheathing plywood must be Exposure 1 performance-rated.

Specify sheathing to the span rating and install sheathing with the long dimension (strength axis) of panels across supports- two or more spans.

Moisture content must not exceed 19%, kiln dried.

Provide plywood and OSB (walls only) according to the following applications:

- ❑ Roofs: 5/8 inch min., 5 ply, Douglas Fir plywood or APA sheathing, Exposure 1, and Exterior grade.
- ❑ Floors to receive resilient flooring and carpet: 5/8 inch min., 5 ply; Douglas Fir APA Rated Sheathing, Exposure 1 and exterior grade, with 3/8 inch APA Sturd-I-Floor rated underlayment is preferred, installed with ring-shank nails; no staples.
- ❑ Southern Yellow Pine Plywood is not recommended for Sub Floors.
- ❑ Floors to receive porcelain floor tile: ¾"minimum T&G, 7-ply; Exterior grade plywood with Type 1 waterproof glue is recommended. Follow assemblies listed in latest edition of Tile Council of America Standards. At a minimum, all plywood floors where tile is to be installed shall be t&g, glued and screwed at 8" o.c. using hot-dipped galvanized screws (typical) and stainless steel screws used at all bathroom floors.
- ❑ Floors to receive Hardwood Flooring: 3/4" minimum plywood minimum, glued and screwed with bridging at floor joists.
- ❑ Exterior Walls: ½' min. Exterior-grade plywood or OSB, Exposure 1.
- ❑ *Note: Edges of OSB must be field-treated with waterproof sealant to prevent swelling.

### EXECUTION

Glue and screw applications for subflooring. Use screwed to fasten underlayment to the subfloor. Provide diagonal joist bridging for added floor stiffness and to prevent squeaking. Use screws wherever I-joists or 2x4 truss floor framing is used, and at larger spans.

Provide ply clips or continuous lumber blocking for fastening panel edges of roof sheathing.

Specify staggered panel end joints and offset joints between finish floor and underlayment. Do not align finish floor joints with intermediate underlayment joints.

## BLOCKING

### DESIGN

Detail blocking, or note all necessary blocking for all wall-hung hardware, plumbing fixtures, cabinets, grab bars, etc. Be sure to include blocking for the following:

- ❑ Drapery tracks to allow drapes to stack clear of the window opening
- ❑ Kitchen cabinets on steel studs
- ❑ Grab bars and other accesibility items
- ❑ At the base of wheel-in showers
- ❑ Electrical fixtures, outlets, hose bibs (on exterior walls), etc.

For bathrooms in adaptable and fully accessible units, detail blocking for grab bars that may be added after occupancy (refer to MAAB regulations for the extent of blocking required).

Nailing ¾" plywood over studs is the preferred method of blocking because it allows installation of grab bars anywhere there is plywood, although it reduces overall room dimensions.

Detail corner framing or use drywall clips to allow wall insulation to be installed without voids

Use hot-dipped galvanized steel nails and end nailing for all blocking; do not toe-nail or nail within ½" of the edge of blocking or the supporting structural member.
Do not use staples to secure blocking

## PREFABRICATED TRUSSES

### MATERIALS

The fabricator's shop drawings must be stamped by a structural engineer registered in Massachusetts.

Follow structural spanning, spacing, and bracing requirements in accordance with the Building Code and Truss Institute standards.

Finger-jointed lumber must be Machine Stress Rated, (MSR)-grade- stress tested, finger-jointed wood for truss framing.

### DESIGN

Detail to allow for shrinkage and thermal movement and truss uplift and to prevent gypsum board separation at the ceiling and wall. Use drywall clips at ceiling-wall joints.

Trusses must be designed to be structurally stable to avoid damage during installation.

Minimum six inch truss bottom chords are preferred to ensure rigid ceilings.

Consider using raised heel roof trusses or design the pitch of the roof to accommodate the full depth of insulation and adequate ventilation

## ENGINEERED WOOD FRAMING

### DESIGN

The Designer should carefully evaluate which engineered wood products are appropriate based on cost-effectiveness, availability, durability and acceptance by local code officials. If any of these factors are identified as potential problems during design, the Designer should specify conventional framing. Consider listing engineered wood framing as an alternate to base bid, where appropriate.

For non-uniform loading conditions the Contractor shall provide an engineering analysis signed and stamped by a Massachusetts registered structural engineer.

## STRUCTURAL GLUED-LAMINATED TIMBER (GLULAMS)

Glulams shall be APA - Engineered Wood Assocaition grade-stamped, in conformance with AITC/ANSI A190.1, American National Standard for Glued Laminated Timber.

Manufacturer's certificate of compliance required.

Glulams shall be specified for the following characteristics:

- ❑ Appearance: graded
  - ? "architectural" for all exposed applications;
  - ? "industrial" for all concealed appications.
- ❑ Additional appearance characteristics shall be per Engineered Wood Systems Technical Note EWS Y110.
- ❑ Required design stress (with or without camber)
- ❑ Maximum allowable wane
- ❑ Ahesives-based on wet or dry use
- ❑ Fire resistance (where applicable)
- ❑ Preservative treatments (when applicable) per American Wood Preservers' Association (AWPA) Standard C28

## I-JOISTS

I-joists shall be grade labelled per allowable spans for uniformly loaded residential construction at various I-joist spacings

APA Performance Rated (PRI), minimum L/480 deflection, conforming with Performance Standard for APA EWS I-Joists, PRI-400. Rim Boards shall be manufactured and stamped in accordance with APA Rim Boards, PRI-401

All accessory products such as blocking panels, rim boards, squash blocks, web stiffeners, etc. shall be provided and installed in accordance with APA Performance-Rated I-Joists, Form Z725.

## LAMINATED VENEER LUMBER (LVL)

Laminated veneer lumber shall be grade marked per the LVL manufacturer's published structural design values using methods established in ASTM Standard Specification D5465 for Structural Composite Lumber.

Proprietary engineered products such should be carefully evaluated and specified only after availibility and cost-effectiveness have been carefully evaluated.

### EXECUTION

Maintain protective covering and or sealants on glulams and I-joists during shipment, storage and handling - protect from rain and sunlight.
Where glulams are "architectural" grade, maintain protective coverings until after installation.

Seal cut ends of glulams with waterproof sealant, immediately after trimming

Store, stack and handle I-joists vertically

Do not allow workers to walk on or load I-joists until full sheathing and bracing are installed.

All damaged I-joists should be removed and replaced with new: DO NOT REPAIR DAMAGED I-JOISTS. I-joists which show evidence of excessive moisture (swelling of webs), greying due to sunlight exposure, cracking, checking or splitting, shall not be installed.

## FASTENERS

In general, wood fasteners should be chosen to transfer structural loads between the members joined, to limit corrosion of the fastener and deterioration or staining of adjacent materials, and to limit the amount of deflection, particularly in floors.